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AUTHOR: (8) Slonim, Yu.M.

TITLE: (6) Relation between chromospheric flares and prominences in active regions

PERIODICAL: (15) Astronomicheskii zhurnal, v. 39: ~~no~~ 5, 1962.
(pp. 798 - 812 + 2 plates)

TEXT: >An attempt is made to classify chromospheric flares on the basis of their connection with prominences. The analysis is based on observations made with the chromospheric telescope and the spectrohelioscope at Tashkentskaya astronomicheskaya observatoriya (Tashkent Astronomical Observatory) during 1958 - 1960. The observational data indicate that in active solar regions chromospheric flares and prominences frequently accompany each other. Thus, flares are accompanied by the ejection of chromospheric matter (including retrogressive ejections) and slow outflow (with a constant velocity of about 10 km/sec) leading to the formation of prominences. The flares are also related to the inflow of streams, loops and jets of coronal prominences. The development of flares is correlated with the Card 1/3

nature of the accompanying prominences. Flares take the form of a short impulse in the case of sudden ejections of chromospheric matter or the form of extended emission bursts in the case of slow outflow of chromospheric matter. Finally, in the case of coronal inflow, the flares are of the prolonged pulsating type, which is in good agreement with the delayed and intermittent development of the corresponding prominences. The flare-prominence correlation is confirmed by the fact that flares characterized by plasma motions (flares-prominences) are similar to the usual forms of sunspot prominences, including typical loop structures [Pettit's sub-class IIb (Astrophys.J., 98, 6, 1943)]. This confirms earlier results reported by the author (Tsirk. Tashkentsk. astron. observ., no. 300, 17, May, 1959). The simultaneous appearance outside active regions of these two processes may be regarded as additional evidence for the correlation between them. Thus, flares accompany the sudden disappearance of extended stationary filaments and the ejection of matter from undisturbed chromospheric regions.

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The correlation between flares and prominences may have a deeper significance, i.e. the two processes may, in fact, be different manifestations of the same effect in the upper layers of the Sun. There are 5 figures and 2 tables.

ASSOCIATION: Tashkentskaya astronomicheskaya observatoriya (Tashkent Astronomical Observatory)

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